Cross-Cascades Corridor Analysis Model Development
Notes from Workshop #2
Friday, February 2nd, 2001

Attendees: Ralph Wilhelmi, Todd Carlson, Nancy Boyd, Faris Al-Memar, Bill Osterhout, Gary Westby, Katherine Klockenteger, Steve Smith, Jim Geringer, Dave Bushnell, Shuming Yan, Jin Ren, Miguel Gavino, Shinwon Kim, Sorin Garber, Doug Hunt, Mark Ford, Tara Weidner, Jolyon Rivoir-Pruszinski, Rob Bernstein, Larry Blaine

Workshop Goal – Definition of a work plan for the development, peer review, and completion of a travel demand forecasting (TDF) model based upon the Spatial Input/Output (I/O) approach using the MEPLAN software package.

Workshop Accomplishments **–** Members of the consultant team outlined the concepts and mechanics behind the MEPLAN model and their relation to the tasks identified in the work plan task list and schedule. Gained input from participants on direction and methods of model development.

Notes from the Workshop:

Opening Review and Comments
The meeting convened at approximately 9:00 am. Nancy Boyd introduced the members of the consultant team, and invited the meeting attendees introduce themselves and briefly describe their interest and expectations as it relates to the construction of a Spatial I/O TDF model for use in the Cross Cascades Corridor Analysis project.   Sorin Garber provided a brief overview of points covered in Workshop #1. Comments of the participants followed. Mark Ford affirmed that by week twelve the need to forecast traffic volumes accurately, employ inputs to effect mode split, and the generation of an O/D matrix, be met. Faris Al-Memar stated that outputs should be identified and needs for performance measurement established as they pertain to the WTP by week twelve. Rob Bernstein suggested that the modeling for Phase II be done as a part of the model testing.

MEPLAN Spatial I/O Software
Doug Hunt presented an overview of TDF modeling using the Spatial I/O approach employing the MEPLAN software package. Doug handed out two papers describing Spatial I/O modeling and the application of MEPLAN in Naples, Italy. Doug described the model as it correlates to the MEPLAN model development work plan task list and schedule (see attached diagrams). Doug pointed out that an I/O table could be provided by a public source, for instance IMPLAN. Miguel Gavino stated that as a result of our time frame it should be determined early on what data sources are available and what details we require. Shuming Yan asked about the model's applicability to US land use planning, which differs from European applications. Doug stated that the less regulated US land use environment would work better, requiring fewer model constraints. For

example in Washington, MEPLAN would be able to identify the tax or subsidy required to constrain growth to the OFM county targets.

Task Order AD - Work Program for Model Development:

Deliverables
Tara Weidner opened with the deliverables outlined in the Task Order. Comments by the participants ensued. Faris Al-Memar noted that the documentation of assumptions made in model development, and a "step by step" users manual that supplies instructions on using data inputs/outputs, updates, printing reports, etc. is to be provided, as these items were included as deliverables in the original scope of work. However, the level of detail provided in this manual has not been fully defined. A discussion of potential members of the Peer Review Panel began. Doug Hunt suggested Marcial Echenique, one of the developers of MEPLAN, as a possible candidate. Sorin Garber also suggested Deb Niemeier as a candidate. Other candidates included Steve Smith, WA Department of Revenue (in attendance), Dick Conway, and professors from the University of Washington.

Principles and Objectives
Tara Weidner cited model development principles and objectives as established by WSDOT were as they appear in Task Order AD - Work Program for Model Development. Shinwon Kim suggested that the first bullet of the principles and objectives be modified to reflect "Capable of analyzing and estimating *interregional* demand for highway, rail, and air modes." Nancy requested that all references to the "I-90 corridor" be changed to "Cross-Cascades Corridor."

Phase II Interface – Task List and Schedule:
Tara Weidner addressed steps designed to fulfill principles and objectives of model development and their relation to tasks enumerated in the Phase II work program schedule.

Develop Model Specifications and Purchase Model Software – Task #1
Shinwon Kim stated that he supports that the model be capable of analysis and estimates of regional demand. Miguel Gavino suggested that professional economists become involved at this step. Larry Blaine submitted that assumptions must be documented throughout the model development effort. Doug Hunt stated that model specifications are driven, in large part, by the data available.

Develop Modal Networks – Task #2
Nancy Boyd stated that it is imperative to pin down what data is useful and employ it in the six-week period allowed for data collection and processing. Faris Al-Memar requested that the consultant team convey to WSDOT staff early on as to what type of data is needed, and to what detail, in order to query WSDOT data sources and maximize efforts in the time allowed.

Develop Zonal System – Task #3

Rob Bernstein expressed concern with zone structure interaction and suggested that teams and stakeholders come together to determine zone splits. Larry Blain stated that the determination of zones depends upon which state highway segments we focus our concern. Miguel Gavino recommends contacting sources of economic activity throughout the state (Greyhound, etc.) to aid in zone selection. Doug Hunt suggested using a "county by county" approach in zonal determination.

Doug Hunt expressed concern that the model building team needed to be able to work without fully reviewing each assumption before proceeding. There just isn't enough time. Mark Ford asserted that the consultant team would provide guiding principles in developing the zonal system, but that the team could not review the detailed decisions before proceeding. To address this, it was suggested that WDOT provide one or two persons to work closely with the model development team and participate in day-to-day decision-making.

Build and Estimate Model Components – Task #4 - #8
Tara Weidner briefed the group on the following key model components that will need to be developed by week twelve:

- Assignment and Route Choice Functions
- Mode Split Functions
- Land Use Model
- Trade Trip Conversion Model (converts economic flows to transport flows)
- Exogenous Travel Demand ("through" trips)

Members of the consultant team stated that model inputs must be obtained and processed by week twelve in order to meet requirements for the Phase II element of the project. The team identified the potential need to synthesize highway O-D trip tables from the highway count data using maximum entropy techniques. Larry Blain suggested the team plan to pursue the development of this trip table, regardless of other available data, as an aid to model validation. Miguel asked about time of day. Doug and Tara noted, due to short time frame, that a typical weekday would be modeled with options for applying peak-hour factors. Larry suggested use of a recreation trip overlay on the weekday model, as trucks typically run all week.

Develop and Assess Full Model Interactions – Task #9 - #10
In this step, the range of model components developed in the previous subtask will be assembled, the model fine-tuned and validated. This effort includes the development and assessment of the following:

- Establish consistent interaction for Base Year
- Develop incremental models (3 year steps)

Next Steps
Workshop #3 will convene at six weeks. At this workshop the consultant team will inform the group of what has been accomplished given the data we have. Eight-Nine weeks marks the decision point to review model progress checkpoints in determination of the accomplishments to date. At this point it must be determined, based on model development progress, what data will be used to estimate the model and what can be provided to support Phase II corridor analysis. If there is not enough data available to synthesize an O/D table, an alternate O/D trip table for various modes must be developed. After a brief discussion it was decided that the consultant team would generate the alternate highway O/D table regardless because it would be a good comparison to the output of the MEPLAN model, regardless of timing.

Miguel raised an issue of whether someone from WSDOT should work directly with the consultant team in order to be available for decisions on detailed assumptions and to assure that WSDOT fully understood the model when completed. Faris and Nancy agreed to discuss this further after the meeting.

Attachments:

§ Model Development Work Program text
§ MEPLAN diagrams
§ "Calibrating the Naples Land-Use and Transport Model" (available by request)
§ "Theory and Application of an Integrated Land-Use and Transport Modeling Framework" (available by request)